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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional)
873.0139.U1(US)

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on November 15, 2007

Signature Elaine F. Mian

Typed or printed name Elaine F. Mian

Application Number	Filed
10/567,629	1/8/2007

First Named Inventor: Vadde, et al.

Art Unit	Examiner
2611	Perilla, Jason M.

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant/inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- [x] attorney or agent of record. Registration number 46008
- [ ] attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

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NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

- [ ] *Total of _____ forms are submitted.

IN THE U.S. PATENT AND TRADEMARK OFFICE

Appl. No.	:	10/567,629
Applicant	:	Vadde, et al.
371(c) date	:	January 8, 2007
TC/AU	:	2611
Examiner	:	Perilla, Jason M.
Docket No.	:	873.0139.U1(US)
Customer No.	:	29683
Title	:	METHOD AND APPARATUS FOR DISCRETE POWER SYNTHESIS OF MULTICARRIER SIGNALS WITH CONSTANT ENVELOPE POWER AMPLIFIERS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Pre-Appeal Request for Review

This paper is in response to the final Office Action dated September 12, 2007, for the above-referenced US Patent Application, and is filed with the Applicant's Notice of Appeal.

Claims 1-7, 9, and 12-37 stand finally rejected and claims 10-11 and 38-41 are objected for depending from a rejected base claim. Only the independent claims (1, 13, 23, and 36) are argued in this pre-appeal review, which are rejected as follows:

- claim 1 is rejected under 35 USC 103(a) as obvious over Wright (US 6313703) in view of Pengelly (US Pub. 2004/0113697);
- claims 1, 23 and 36 are rejected under 35 USC 103(a) as obvious over Chethik (US 6593827) in view of Kornfeld (US 5974041);
- claim 13 is rejected under 35 USC 103(a) as obvious over Hosur (US Pub 2003/0152023) in view of Chethik and Kornfeld.

A complete listing of claims may be seen in the Applicant's Amendment dated July 27, 2007. Arguing only the independent claims in this pre-appeal submission does not relinquish the Applicants' right to argue further dependent claims on appeal to the Board.

The first rejection to claim 1 is over Wright and Pengelly.

Claim 1 recites (emphasis added): A power synthesizer comprising a plurality of *n* stages in parallel with one another, wherein *n* is an integer at least equal to two, each of the *n* stages comprising:

a modulator and a discrete amplitude amplifier in series with one another,

each n^{th} discrete amplitude amplifier adapted to apply a gain that is unique as

compared to all other of the discrete amplitude amplifiers; and

an actuator adapted to simultaneously switch the *n* modulators.

As shown in bold, each of the at least two discrete amplitude amplifiers applies a gain that is unique as compared to all other of the discrete amplitude amplifiers. Both Wright and Pengelly are asserted against this element. The Applicants contend that the purported modification of either is inoperative.

The rejection asserts Wright's digital compensation signal processor 21 and amplifiers 15, 16, may be modified with Pegnelly's teaching of unequal gate widths for Wright's amplifiers 15, 16 to apply unique gains as compared to one another. Wright's amplifier's 15, 16 are not discrete; they operate in the analog domain (at passband/IF) immediately following RF upconversion 23, 24 per Wright's Figure 2 and col. 10 lines 42-55.

The purported modification is seen to render the modified Wright LINC amplifier 10 inoperative. Equation 1 of Wright (col. 9 line 28) shows that the two baseband signals $Ph_A(t)$ and $Ph_B(t)$ are from the transmitted signal *s*(t), which Wright recombines at col. 10 lines 42-44 and 58-60 after amplification 15, 16 at passband to re-form an amplified version of the original signal $ks(t)=kPh_{ARF}(t)+ kPh_{BRF}(t)$. The amplifiers 15, 16 therefore apply the same gain k. If the amplifiers 15, 16 of Wright were adapted by Pengelly to be discrete and of different gains, then those differential gains would overamplify one passband component and underamplify the other, and the signal arising from combining these would not reconstitute the original signal as Wright seeks to do, such as for its feedback loop. In the combination asserted in this rejection, the amplified signal combined from the modified amplifiers 15, 16 will be $k1Ph_{ARF}(t)+ k2Ph_{BRF}(t)$ [where k1 and k2 are the different gains] which no longer reflects Wright's original transmitted signal *s*(t).

The final office action addressed the above argument by contending that one of ordinary skill could combine these references so that Equation 1 of Wright would no longer be applicable for the modified amplifiers, and such a modification would have a reasonable likelihood of success. Assuming *arguendo* each of these contentions is true, they fail to overcome the Applicant's rebuttal of the original prima facie case for obviousness because the purported modification is either inoperative or Wright's principle of operation must be substantially changed. First, that the references <u>can</u> be combined is alone insufficient (MPEP 2143.02, part III). Second, substituting Pengelly's discrete amplifiers having different gate widths to define

different gains for Wright's amplifiers, the argument above shows that recombining those differently amplified signals (at passband in Wright) does not reconstitute anything that can be analogized to the transmitted signal, which is what Wright seeks to reform. This renders the modification inoperative (see MPEP 2143.02 part V). The 'new manner of operation' noted in the final office action might overcome this inoperativeness if the scope of the newness were unbounded, but by definition obviousness requires that any 'new manner of operation' be within ordinary skill as demonstrated in the prior art so to avoid impermissible hindsight. The specific new manner of operation asserted is not clearly evident from the rejection. If one presumes that the new manner of operation is to differentially amplify the baseband components in a first instance with Pengelly's amplifiers and then differentially amplify in a second instance so as to effectively remove the differential amplification of the first instance, then there may be a reasonable likelihood of success but there is not seen motivation to do so in any practical modification of Wright (see MPEP 2143.01). This new method of operation would appear to add another set of amplifiers for the mere purpose of removing what was imposed by the modification with Pengelly's amplifiers. Since no benefit is seen from making the purported modification operable but the cost is increased hardware, and therefore not obvious. One might effect a more complete redesign of the Wright circuit, but this would exceed the limits of permissible obviousness (MPEP 2143.02 part VI).

Claim 1 is seen to be non-obvious over the combination of Wright and Pengelly.

Claim 1 is further rejected, along with claims 23 and 36, over Chethik in view of Kornfeld.
Claim 23 recites (emphasis added): A method comprising:

providing a separate bit of a bit stream on each of *n* parallel inputs each bit of the bit stream representing a different significance;

for each of the *n* parallel inputs, controlling a phase of the input bit and **amplifying by an n^{th} discrete amplitude amplifier a power of the input bit at a power that is unique respecting all other *n* parallel inputs**;

combining all *n* phase controlled and amplified bits in one of a spatial manner and a circuit manner.

Claim 36 recites: A power synthesizer comprising:

a plurality of *n* stages in parallel with one another, **wherein *n* is an integer at least equal to two**, each of the *n* stages comprising modulating means in series with amplitude amplifying means, **wherein each of the *n* amplitude amplifying means is for applying a**

gain that is unique as compared to all other of the *n* amplitude amplifying means; and

actuating means for simultaneously switching the *n* modulating means.

Chethik teaches applying equal gains by at least three amplifiers, and dithering gain or phase of each in turn in a gain/phase adjustment circuit 14 for sequential calibration of each stage. The Examiner agrees with this characterization and asserts a modification in view of Kornfeld's parallel amplifiers, which the final office action cites to Kornfeld Fig. 3 and col. 5 lines 10-35 for the proposition that each of these amplifiers provide a unique gain value.

First, Kornfeld is not seen to disclose discrete power amplifiers that apply a gain that is unique as compared to others; Kornfeld's output power from each amplifier may differ, because the signal fed to the different amplifiers is at a different initial power by Kornfeld's design. But output power is not gain, and these claims recite 'applying a gain that is unique' or 'amplifying at a power that is unique'. In all instances, the gain of all Kornfeld amplifiers are seen to be identical: "Similarly, the amplifier stages A2, A3 and A4 are each biased to produce the same linear gain as stage A1 over different output signal ranges." (Kornfeld col. 5 lines 18-20, emphasis added). The subsequent text of Kornfeld through line 63 show examples whereby different input signal power causes different ones of the amplifiers A1-A4 to be switched on so as to control the total output power. In no instance does one Kornfeld amplifier apply a different gain or amplify at a different power than another; differences in output signal power result directly from differences in input signal power but the gain applied is identical across all A1-A4 amplifiers.

Second and as has been argued, it appears that to modify Chethik with Kornfeld's amplifiers, so as to combine Chethik's gain/phase adjustment circuit 14 with its high power amplifier HPA 13 in each stage, would not appear to be a discrete amplitude amplifier as in claim 1, but a continuously variable amplifier with gain continuous over Chethik's potential dither range, which is not discrete. Such a modification would also change Chethik's principle of operation, in that dithering would apparently not be confined to one stage at a time to efficiently drive error toward zero, but dither would be applied to all stages simultaneously. See Chethik, col. 4, lines 14-18 in view of col. 3, lines 55-60. The purported modifications by Kornfeld are seen to substantially change Chethik's principle away from dithering to drive error to zero, and are therefore not within ordinary skill.

For these reasons, claims 1, 23 and 36 are seen to distinguish over Chethik and Kornfeld.

Additionally, claim 23 recites that each bit of the bit stream which is separately applied to the various parallel inputs represents a different significance (e.g., most significant bit, least significant bit, as described in the written description at paragraph [0023]). Chethik uses a single keying bit to switch the modulators 12 on or off, and is not seen to base phase or gain dither in different stages on bits of different significance within the same bit stream. Instead, Chethik is seen to operate similarly on the entire bit stream in each of the parallel stages, with dither adjusted on each stage sequentially (col. 1 line 65 to col. 2, line 8). The final office action addresses this by asserting that the different bit streams of Chethik each have different significance because they carry different information. This is conclusory and fails to make the prima facie case for obviousness: different information does not imply different significance. As an analogy, in a packet switched network the fact that two consecutive packets carry different information does not imply that one is more or less significant than the other.

Claim 13 is rejected over Hosur, Chethik and Kornfeld, and recites in relevant part (emphasis added):

a power synthesizer block comprising **at least two discrete amplifier stages** in parallel, ..., and **each discrete amplifier stage comprises a discrete amplitude amplifier adapted to apply a gain that differs from that applied by each other discrete amplitude amplifier**.

The rejection of claim 13 relies on the combination of Chethik and Kornfeld for obviousness of the two or more discrete amplifiers of claim 13. By the above analysis of those references, the combination of Chethik and Kornfeld fails to teach or suggest that element, which is neither seen nor asserted as within Hosur.

The Applicants respectfully request the rejections be withdrawn.

Respectfully submitted:

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Nov 15, 2007
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11/15/2007
Date

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Name of Person Making Deposit